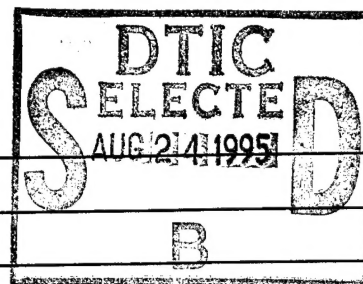


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Operational Maneuver and Anti-Submarine Warfare

by

Timothy S. McElhannon  
CDR, U.S. Navy

A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

Signature: Timothy S. McElhannon

16 June 1995

Paper directed by Captain D. Watson  
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## ABSTRACT

### Operational Maneuver and Anti-Submarine Warfare

The threat posed by diesel submarines operating in littoral regions presents a difficult technological and tactical challenge to naval forces engaged in the mission of achieving battlespace dominance as an enabling force for joint littoral warfare. The Arabian Gulf is one of the most vital regions to U.S. national interests. Iran's recent military build-up includes modern missiles, patrol boats and diesel submarines, which may be used to gain control of shipping in the Gulf by controlling the Strait of Hormuz.

Operational maneuver, one of the principles of operational art, is key to the Navy's doctrine in From the Sea and Forward From the Sea. The objective of operational maneuver is to strike quickly and violently to isolate and frustrate the enemy and destroy their forces and will to fight. The application of operational maneuver can enable U.S. forces to overcome the shallow-water diesel submarine threat by using speed and concentrated fires to avoid the enemy's strengths and attack their weaknesses, thus isolating, neutralizing and destroying the threat.

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## Introduction

The Arabian Gulf is one of the most vital regions of the world in terms of U.S. national interests. The National Security Strategy outlines U.S. policy in the region as focused on deterring threats to regional stability with a key objective of reducing the chances that an aggressor will emerge to "threaten the independence of existing states."<sup>1</sup> U.S. strategy and policy reflect the economic interests of the United States and its allies which depend on uninterrupted maritime trade through the Strait of Hormuz and the Arabian Gulf.

Since the late 1970s both Iran and Iraq have periodically assumed the role of regional aggressor and the United States has responded with military force of varying degree on several occasions. Most recently the Iraqi invasion of Kuwait resulted in Operation Desert Storm and subsequent operations designed to ensure that Iraq does not attempt another aggressive act against neighboring nations. In the mid 1980s during the Iran-Iraq war, U.S. policy was more concerned with the aggressive behavior of Iran during the "Tanker War." The U.S. military conducted several operations against Iran including *Operation Praying Mantis*--the largest U.S. surface naval battle since World War II--which was in retaliation for the Iranian mining of the USS Samuel B. Roberts. In *Praying Mantis*, U.S. forces destroyed two Iranian gas/oil platforms and several Iranian ships and boats.<sup>2</sup>

During this time period, Iran was weakened due to the losses suffered in the Iran-Iraq war and was not in a position to seriously threaten either the United States or its allies. Now, less than ten years later, Iran has rebuilt its military, acquired sophisticated weapons including modern diesel submarines, and is again pursuing hegemony in the Gulf region.

One of the most challenging aspects of any future conflict in the Gulf region is the threat posed by Iranian diesel submarines. This paper addresses the challenge of countering the Iranian diesel threat by applying operational art, specifically the principle of operational maneuver, to the anti-submarine warfare (ASW) function of battlespace dominance and joint littoral warfare.

#### The Iranian Threat

Saddam Hussein's invasion of Kuwait in August 1990 focused U.S. attention on Iraq as the greatest threat to stability in the Gulf region. Saddam's periodic bad behavior since the Gulf War continues to draw much of the attention of U.S. political and military leaders. Nevertheless, recent developments have highlighted the increased threat posed by Iran to maritime trade in the Gulf and to the security of Gulf Cooperation Council (GCC) nations.

Iran's political leadership is hostile to the United States and any western influence. Its pursuit of regional hegemony make it an immediate threat to stability in the Gulf. The Iranian military is sharply focused on carrying out this

destabilizing political policy. "The Iranian Navy's long-term strategic aims are to achieve dominance in the Persian Gulf by developing a force capable of closing the Strait of Hormuz to oil shipments and to deprive other Gulf nations of control of the Persian Gulf proper."<sup>3</sup>

According to the Secretary of Defense, Iran has made a substantial military build-up in the vicinity of the Strait of Hormuz which is "beyond any reasonable defensive requirement and can only be regarded as a threat to shipping in the area."<sup>4</sup> This build-up includes naval combatants, surface-to-surface and surface-to-air missiles, and two Russian export Kilo class diesel submarines.

The Kilo submarines were delivered to Iran in November 1992 and August 1993. The first Kilo is based at Chah Bahar on the Gulf of Oman, the second is based at Bandar Abbas, just inside the Strait of Hormuz.<sup>5</sup> After several years of experience with the Kilos, it appears that the Iranian diesel submarine operators have reached a level of proficiency that is recognized as a threat by senior U.S. Navy leaders. The top Navy commander in the Gulf region said that the Iranian Kilos were seen firing torpedoes in the fall of 1994 and have been conducting exercises in combination with Iranian warplanes and with other surface ships.<sup>6</sup> In recent testimony before a Congressional committee, the Chief of Naval Operations said that he "rated the Iranian Navy's submarine capability a 10 on a scale of one to 10, given what their

mission would be."<sup>7</sup>

### The Diesel Submarine Mission

It is anticipated that Iranian submarines will be used to attack merchant shipping near the entrance to the Gulf and, in the event of war, to shutdown the Strait of Hormuz and control the littoral waters along the Iranian coast.<sup>8</sup>

The threat posed by diesel submarines operating in the littoral presents a difficult technological and tactical challenge to those involved in shallow water ASW. Littoral regions are characterized by shallow, noisy water which is subject to a high volume of surface ship traffic. These conditions make it difficult to detect, track and attack quiet diesel submarines when they are operating submerged using traditional acoustic sensors.

The good news is that when a submarine is submerged it is difficult for it to use its own sensors to identify and attack surface ships. The poor environmental conditions work both ways. In order to conduct its mission, a submarine must operate at or near periscope depth much of the time. "Third World diesel operators will frequently expose their masts, particularly if their crews are untrained. They will operate at or near periscope depth (down to 200 feet) 50% of the time and possibly more, each time putting the scope up for 10-15 seconds, or if untrained, 2-3 minutes."<sup>9</sup> Additionally, diesel submarines are only quiet when operating on electric battery power. In order to recharge its batteries, a diesel submarine

must operate its diesel engines at snorkel depth for a considerable length of time.

When the submarine is snorkeling or at periscope depth it is vulnerable to detection by radar or enhanced visual sensors. This vulnerability can be exploited tactically.<sup>10</sup> Much of the current ASW technology development and training is focused on detecting submarines operating at or near the surface.

The Iranian submarine capability has significantly changed the nature of the threat to U.S. and allied forces operating in the Gulf. The threat of attack by missiles, mines and torpedoes makes operating in the crowded and restrictive waters of the Gulf very dangerous. Merchant ships and naval vessels must pass within visual range of the Iranian mainland and islands just inside the Strait of Hormuz, the area of most significant military buildup.

#### The Navy's Role in Joint Littoral Warfare

The nature of the Gulf as a maritime theater of operations requires that any military operation against Iran will heavily involve naval forces, particularly in the initial stages. It is likely that the Iranian leadership learned a lesson at Saddam's expense in Desert Storm and will not permit the United States a long period to build up its own military forces in the Gulf prior to hostilities. The Navy will carry a heavy share of the fighting for at least several days until significant numbers of Army and Air Forces arrive in the



region.

In the event of conflict, it will be important for the United States to quickly gain access to friendly bases in the region in order to expedite the introduction of land based Army and Air forces to maximize firepower. In almost any scenario imaginable, it will be in the best interest of GCC nations to allow U.S. forces in since their purpose will likely be to stop Iran from attacking GCC nations or their shipping. The possibility that Iran could use chemical weapons delivered by its new ballistic missiles must be considered. Such chemical weapons could be used to discourage GCC nations from allowing U.S. forces access to their bases. Whether Iran is able to strike quickly, with little strategic warning, or to coerce its neighbors into denying the United States access to bases remains to be seen. In any case, it is evident that naval forces will be the preponderant force in the initial stage of a conflict.

This is the scenario that has been anticipated in current naval doctrine as described in From the Sea and amplified recently in Forward From the Sea. According to the doctrine, a primary Navy mission is to achieve battlespace dominance in the role of an enabling force engaged in joint littoral warfare. As stated in Forward From the Sea, "The keys to our enabling mission are effective means in place to dominate and exploit littoral battlespace during the earliest phases of hostilities."<sup>11</sup>

Battlespace dominance in any littoral region where hostile submarines operate will be heavily influenced by the submarine threat to U.S. and allied naval forces. In an interview conducted prior to his assuming the position of Vice Chairman of the Joint Chiefs of Staff, Admiral Owens stressed the importance of ASW as a function that enables the Navy to carry out its basic mission in joint littoral warfare. ASW "is a means through which we are able to conduct the missions required of us in this new world."<sup>12</sup>

#### Maneuver Warfare From the Sea

In From the Sea the Navy has defined the way it intends to fight future conflicts using the principle of operational maneuver:

We specialize in *maneuver warfare* from over the horizon, using the ocean to project force at soft points in the enemy's defense. Our job during a regional conflict is to control the ocean adjacent to the littoral battlefield, the ground from the shore to our objectives, and the skies above both. We rely on Navy and Marine Corps strike assets to neutralize enemy threats that may engage us from the outside of established defense perimeters.<sup>13</sup>

Joint Pub 3-0 provides more on the principle of operational maneuver:

The purpose of maneuver is to place the enemy in a position of disadvantage through the flexible application of combat power. Effective maneuver keeps the enemy off balance and thus also protects the friendly force. It contributes materially to exploiting successes, preserving freedom of action, and reducing vulnerability by continually posing new problems for the enemy.<sup>14</sup>

The beauty of operational maneuver is that it does not seek to project force in a linear fashion resulting in

force-on-force attrition-style engagements. Instead operational maneuver is based on the simple idea that forces use speed and tempo of operations to seek out existing gaps or create new gaps in the enemy's defenses through which to strike at the enemy's center of gravity. Avoiding the enemy's strengths and striking at its weaknesses is key to the principle of operational maneuver. In discussions of operational maneuver, the enemy's strengths and weaknesses are often referred to as surfaces, or hard spots, and gaps, or soft spots.<sup>15</sup> The exploitation of the enemy's weaknesses creates windows of opportunity to destroy or simply to neutralize enemy forces. This in turn leads to the enemy's isolation, confusion and loss of the will to fight.

The principle of operational maneuver is not new to naval warfare. In the Pacific Theater during World War II, U.S. forces used operational maneuver to avoid Japanese strongholds, such as the island of Rabaul, while isolating the Japanese forces on the island with periodic air attacks.<sup>16</sup> U.S. forces avoided casualties by not invading Japanese strongholds and achieved the operational objective with less cost in men and material. This is an obvious advantage of avoiding enemy strengths and exploiting weakness.

Following World War II and the development of nuclear weapons, operational art entered a period of dormancy. Naval doctrine focused on nuclear ballistic missile submarines and Mahanian-style major fleet engagements. ASW was, for a time,

the Navy's number one priority and ASW doctrine was viewed as a separate or stand-alone mission devoted to tracking and attacking each and every Soviet submarine in the event of war.

In recent years operational has resurfaced as the key to naval operations in joint littoral warfare as described in From the Sea and Forward From the Sea. Application of the principle of operational maneuver to the ASW function requires a new way of thinking about ASW and its place within the larger naval mission of battlespace dominance and joint littoral warfare. "ASW is not an end in itself. It is a means through which we are able to conduct the missions required of us in this new world."<sup>17</sup>

#### Operational Maneuver and ASW

The application of operational maneuver to ASW is different in that it closely integrates ASW into the overall Navy mission of battlespace dominance as an enabling force for joint littoral warfare. Operational maneuver actually liberates naval forces traditionally devoted solely to the ASW mission. Instead of planning to search out and destroy each and every enemy submarine within a large expanse of ocean, operational maneuver applied to ASW seeks to avoid the enemy strength, where the submarine has the advantage, and exploit gaps, areas outside of enemy submarine coverage.

In this way naval forces can use operational maneuver to their advantage and minimize casualties, similar to the way land forces used maneuver for the same purpose in Desert

Storm. Operational maneuver greatly reduces the risk to friendly surface forces by avoiding enemy strengths. It makes no sense to send high value naval units into an area where the enemy has the advantage of terrain (in a maritime sense) and has the ability to inflict great damage with relatively unsophisticated weapons.

In World War II the Germans lost their newest cruiser, Bluecher, in Operation Weserbrung by attempting to sail through a narrow fjord past Norwegian forts enroute to Oslo. Bluecher was sunk, with heavy loss of men, by guns built during the Crimean War and torpedoes manufactured at the turn of the century.<sup>18</sup> The catastrophe could have been avoided by not placing the ship in such a vulnerable position. The ships strength, mobility, was lost and it was destroyed by a relatively low-tech threat which could have been neutralized through other means: an air strike or special operations forces.

One of the great advantages that the U.S. military has is its operational reach and its stealthy weapon systems, both of which produce effective operational fires with minimum risk. This advantage must be used in any future conflict. In an Arabian Gulf scenario, instead of kicking off the war with an ASW sweep followed by ships streaming through the Strait of Hormuz, an alternative would be to launch a combined and closely coordinated attack on the enemy's center of gravity - which may be its command and control system and military

infrastructure.

A diesel submarine has the advantage when it can hide and wait for approaching enemy ships. If the ships do not approach the submarine, it will have to come out of its safe area into deeper water to attempt an attack. Therefore, by prudent positioning of ships and other forces, the operational commander can avoid the danger areas where diesel submarines have the tactical advantage. The simple idea of avoiding danger areas means that the aircraft carrier and other high-value units remain in the rear, out of the submarine's range, during the initial stage of hostilities. The carrier would still be in range to launch strikes, but would not, for example, sail through the Strait of Hormuz into the Arabian Gulf. This would be playing to the enemy's strength. Keeping the high value units away from shallow water would require the diesel submarine to either come out after its target or to remain in the shallows where it is in effect isolated and neutralized. If the submarine comes out of the shallows to search for the carrier operating in the basins (deep water), it is giving up its strength and is vulnerable to attack by ASW forces which are more effective against submarines in deep water.<sup>19</sup> If the submarine stays in the shallows, it can be avoided while operational fires are concentrated from beyond the enemy's reach against its center of gravity. If operational fires destroy the enemy's command and control network, the submarine is isolated and denied its source of

information making its even more vulnerable to direct attack by ASW forces or indirect attack by PSYOPS forces.

#### The Value of Intelligence

Information about the location of hostile forces and their operational and tactical capabilities is absolutely critical to maneuver warfare. The more that is known about the enemy, as early as possible, the better. This information can then be used in operational planning to exploit the adversaries weaknesses.

Simply by knowing, with a reasonable degree of certainty, where the enemy submarines are, provides opportunities to exploit the gaps in the enemy forces' coverage. Additionally, the use of deception to bias enemy submarines to a location of anticipated attack, creates opportunities to conduct the actual attack at a point of weakness.<sup>20</sup>

Understanding how the enemy operates creates opportunities to exploit weakness and breakdown the enemy's ability to function. If our intelligence resources tell us that the political/military leadership exercises tight control over submarine movements and the submarine depends heavily on targeting information from his own ships and aircraft, then we can effectively isolate the threat by destroying the command and control system. Such action would not only isolate enemy submarines but all enemy forces, an important goal of command and control warfare.<sup>21</sup> An isolated submarine is still a threat, but much less of a threat with very little ability to

locate and attack our ships as they continue to use maneuver to avoid strengths and exploit weaknesses. At this point the enemy submarine commander is confused and has few good options.

#### Conclusions/Recommendations

The concept of operational maneuver applied to naval warfare blurs the lines between ASW and other naval mission areas and illustrates the integrated nature of the mission of battlespace dominance as an enabling function for joint littoral warfare. Iranian diesel submarines, together with other Iranian forces, pose a real threat to U.S. national interests in the Gulf region and must be addressed at all levels--tactical, operational and strategic. The operational commander has the command and control and weapons platforms available to use maneuver warfare to avoid the enemy's strengths while using the advantage of the extended reach of U.S. weapons to attack the enemy's center of gravity with effective operational fires.

Operational maneuver cannot solve all of the problems at the tactical level of war but it can make these problems less significant to the overall conduct of the operating by avoiding surfaces and penetrating gaps, simultaneously reducing the risk to our own forces. It is important to continue technological development so that someday we will be able to "see" into the water to gain a more complete picture of the battlefield, but we are not there yet.<sup>22</sup>



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